

CORRESPONDENCE.

Methods of Recording Bird Songs.

EDITOR OF 'THE AUK,'

Dear Sir:— With great interest I read the "Suggestions for Better Methods of Recording and Studying Bird Songs," which appeared in the April issue of 'The Auk.' All methods of notation used in bird-work are open to some criticism and suggested improvements should be welcomed. This is particularly true in the study of bird-song, which has not enjoyed the scientific analysis from students, it should have had.

The title, given to the paper by Mr. Aretas A. Saunders, would indicate an entirely new method of notation. A perusal of the subject matter proves such is not the case. What he suggests is a modification of the old method of musical notation. An enlarged form of musical staff is used and notes are pitched within the limits of one octave. The chief difference consists in the representation of the notes by horizontal lines instead of by the musical dot at the top of a vertical line and the abandonment of the indication of rhythm for the sake of ascertaining a song's duration. Now a method of notation should be as comprehensive, accurate and simple as the subject under study will allow. Is Mr. Saunders' improved method more comprehensive, more accurate or more simple than the old. It must be one of these three to justify its employment in place of the older method.

In order to answer this, let us follow Mr. Saunders' order. He enumerates five characters of bird music, about which we desire knowledge: "pitch, duration, intensity, pronunciation and quality." Now this enumeration is peculiar to Mr. Saunders. The usual enumeration, followed by students of music, is "pitch, time, intensity, and quality" and these four factors are said to cover all that we can learn about any kind of music. "Time" is a much more comprehensive term than "duration" and covers not only the relatively unimportant factor of "duration," but also "metre" and the extremely important factor of "rhythm." The omission of time and with it rhythm is a serious one and at the outset renders doubtful any improvement by this method.

But avoiding for a moment a discussion of rhythm, I shall take up in order the five points he has selected. To begin with the third and fifth characters, he admits *quality* and *intensity* cannot be recorded accurately by his method. Of the fourth, *pronunciation*, he says:— "It is probably true that a purely musical note has no real vowel sound and that the only difference in such notes is that of quality and *not*¹ pronunciation." Of consonant sounds he has recognised only one, the "liquid L" and he represents this by a loop in his record, which at once blurs the pitch of that particular note. Such a blurring of the important factor of pitch can be avoided in the old method by recording these rare consonantal suggestions with graphic symbols above the staff. But the truth is that, if pronun-

¹ Italics are not in the original paper.

ation does appear occasionally in bird songs, it is of very slight importance and should be classed as a minor factor under the heading of "quality", which covers also the much more important factor of "over-tones" or the so-called "harmonics" of a tone. These *do* exist in many bird tones and are the cause of the difference between the simple, clear-whistled tone of the Piping Plover and the complex rich tone of the Wood Thrush.

There remain but two of Mr. Saunders' "points" to consider, *pitch* and *duration*. "Pitch" is truly a very important factor and, with the possible exception of time, the most important of all, for from pitch we gain some idea of the bird's intuitive knowledge of the fundamental relations of one tone to another. It should be represented with exactitude, if that is possible. Now there are of course in some songs notes which seem patently discordant with the rest of the song. And in regard to these Mr. Saunders would have his readers believe that his method of notation is an improvement, because it records them. But does it? Helmholtz's study of sound proves that in order to represent a discordant note out of harmony even in the natural scale, it would be necessary to have a staff, composed of at least 528 horizontal lines for the one octave between Middle C and the next C above it, instead of the 12 of this new system, for there are at least that many possible tones within the compass of that octave. And for the octave, which is used to confine the song of the Vesper Sparrow, there would have to be at least 4224 different lines to record *one song*! Such a system I imagine would be too cumbersome even for Mr. Saunders. The fact is that our author has not tried to represent flatted and sharped notes with accuracy, but merely to indicate that they are flat or sharp. This is of no advantage to another song-student, for unless the flatted note is indicated precisely, it is impossible to be sure it was not an harmonically true note in the more complex natural scale, which the birds probably use. Every student of music knows that the modern scale of twelve notes and its method of notation is a condensation of the natural scale for the sake of simplicity and convenience. On the other hand the proposed system is more cumbersome without insuring one whit more of accuracy. It is a more cumbersome one, because it requires 12 lines instead of 5 to record a simple song and, for a song of great range such as the Hermit Thrush's, would require 36 lines, whereas the whole of that master song, ascending and descending over the confines of three octaves, can be neatly recorded by the old method on a staff of 5 lines! This new method is not so accurate for the recording of pitch, because short horizontal lines are employed against a horizontal staff instead of the vertical line crowned with a clear round dot. Indeed it is very difficult to determine from Mr. Saunders' printed records, when he is attempting to record a note on the pitch and when a trifle off of it.

It is at once apparent that the horizontal line is used for "pitch" in order that the vertical may be reserved for "duration." Indeed our whole system of notation, the evolution of centuries, has been changed in order to record this one thing, which has always been ranked by musicians as of very slight importance, *e. g.* the duration of a song in seconds. The length of a song

is of about as much value as the length of the white on the outer primary of a Junco. What we want to know about color is its arrangement or the relative proportion of the various colors on a bird, resulting in color pattern. What we want to know about duration is the *relative* duration of the individual notes of a song and this would result in some idea of the song's rhythm. Now the existence of rhythm is denied by Mr. Saunders, although oddly enough, it is shown to exist even by his own records. But of this later! The curious thing about it is that duration has always been indicated by the old system and can be quickly ascertained from any complete record. For instance in Mr. Matthews' record of the Vesper Sparrow's song in his 'Field Book of Wild Birds and Their Music,' the metronome time is given as one quarter note equals 120, which means that 120 of the quarter notes in that song, if it possessed that many, would occupy the time of one minute. From this one graphic symbol it is easy to calculate the duration of that song as exactly $5\frac{1}{2}$ seconds. If it were at all important to give this factor prominence, it would be much simpler to place the symbol "D $5\frac{1}{2}$ S" at the end of the musical staff than to cover the staff with a great number of useless vertical lines.

But far the most defective part of Mr. Saunders' system is its omission of rhythm. Even the non-musical bird student has recognised its existence, whether consciously or not. This is evident in such syllabic renditions of songs as "Técher, técher, técher, técher," which indicates quite clearly the observer perceived the fact that the first note of each couplet in that particular Ovenbird's song received a periodically reiterated accent and this is rhythm. It is also indicated in the rendering of the White-throat's song as "Óld Sáim Péabody, Péabody, Péabody." Both of these birds have a splendid sense of rhythm, quite as good, if not better than the average musical performer of the human race. This is even more true of the Whip-poor-will, whose sense of rhythm is so perfect that his constant reiteration of the accented "Whíp" can be timed by a metronome exactly. Indeed his rhythm is too perfect to satisfy the human desire for variation, which humans obtain by means of the "ritard" and the "acceleration" and this song, therefore, becomes mechanical and monotonous. That the greater bird songsters are not so monotonous only proves their greater sense for real rhythmical effects, which can seldom be beautiful, when rigidly bound to a mechanical time. It is often true that one cannot check up the greater songsters' rhythm with a stop-watch, such as Mr. Saunders uses, but neither could one do the same with the best human singers, for they frequently ritard and accelerate their time to avoid this very mechanical rhythm, which he seems to believe so essential to music.

That rhythm does exist in bird songs is curiously proved by Mr. Saunders' own records. In three of his nine, the rhythm is absolutely perfect, indeed mechanical and in the other six it probably existed, although obscured by his method of notation, which among other factors does not record the "accent". For instance in his record of the Robin's song there is a periodical alternation of sets of notes and pauses. Each set of notes consumes

exactly the same amount of time, four tenths of a second, and each pause consumes two tenths of a second or exactly half the amount, credited to each set of notes. If we separate each set of notes and its adjoining pause into a measure we would have five equal measures and if we give each set of notes and its pause their proportionate amount of beats, we would give two beats to each set of notes and one to each pause. The whole song would then consist of five measures in perfect 3 time and to know this, e. g. that a wild bird uses naturally a measure of time, employed by humans for many centuries, is a great deal more interesting and important than to learn the detached fact, that the whole song consumed two and $\frac{8}{10}$ seconds by a stop watch. It must be admitted there are a few songs, which do not follow any given time through to the end, but Mr. Saunders is wrong, when he says that the old method "does not allow the record" of such songs. The irregular rhythm of the Thrasher's song is perfectly represented by the old method in Mr. Matthews' book and could not be represented so well by this new method.

By this discussion I believe I have proved that of Mr. Saunders' five chosen characters of song, two, *quality* and *intensity*, have not been recorded at all by his method; two, *pronunciation* and *duration* are unimportant and can and have been recorded by the old method; and the last, *pitch*, is not recorded so accurately. Finally a sixth factor of the utmost importance, *rhythm*, is entirely abandoned. The suggested method is therefore not so comprehensive as the old and, incidentally I have shown, it is not so simple nor so accurate.

Near the close of this paper Mr. Saunders remarks apropos of the qualities necessary for the student for the recording of bird songs that "a knowledge of music is essential also, but it need not be great." In my opinion the student should have at least an accurate knowledge of Harmony, but at any rate he should certainly know the meaning of ordinary musical terms. A common error of this kind is to confuse the meaning of the word "trill" with that of a "repeated note." As such a mistake renders many records inaccurate, it is necessary to point out that a "trill" is *not* a series of notes on the *same* pitch, repeated so rapidly that their number cannot be counted, but is a rapid and regular *alternation* of two notes of entirely *different* pitch.

In conclusion I would like to state that the old system of notation is just as much a "graphic method" as Mr. Saunders' or any other. More than any other graphic system it is a splendid system of symbols, which has been evolved and improved by ages of use and is now better known to the public than any system of notation, used in the other departments of bird-work. It has its limitations and will probably be improved along the line of recording more accurately the natural scale, but such improvements as Mr. Saunders suggests are in the nature of a retrograde movement toward something less comprehensive and less simple.

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